AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of operating an ionized physical vapor deposition system comprising:

positioning a patterned substrate having features including a field area, a sidewall, and a bottom surface on a wafer table within a processing chamber, wherein the wafer table is cooled to a temperature of approximately -30° Celsius;

creating a high density plasma in the processing chamber, wherein the high density plasma comprises ions of coating material and a large number of process gas ions;

exposing the patterned substrate to the high-density plasma;

performing a Low Net Deposition (LND) process step wherein a target power or a substrate bias power, or a combination thereof, is adjusted to establish an LND deposition rate; and

the performing of the LND process step includes depositing material onto the field area at a deposition rate of greater than zero and not more than 30 nanometers per minute (nm/min) while depositing or etching material, or a combination thereof, on the sidewall or the bottom surface, or a combination thereof by simultaneously directing ions of the coating material and ions of inert processing gas onto the substrate and thereby depositing material onto the field area of the substrate while etching the deposited material from the field area and thereby producing substantially no overhanging material at feature openings.

2. (Previously Presented) The method of operating a deposition system as claimed in claim 1, wherein the LND process step comprises an LND pre-process time, an LND processing time, or an LND post-process time, or a combination thereof, wherein the LND pre-process time varies from approximately 0 seconds to approximately 50 seconds; the LND processing time

varies from approximately 10 seconds to approximately 500 seconds; and the LND post-process time varies from approximately 0 seconds to approximately 5000 seconds.

Claims 3-5 (Canceled)

6. (Previously Presented) The method of operating a deposition system as claimed in claim 2, wherein the deposition system further comprises a pressure control system coupled to the processing chamber, the method further comprising:

establishing an LND chamber pressure during at least a portion of the LND processing time, wherein the LND chamber pressure is less than approximately 130 mTorr and greater than approximately 20 mTorr.

7. (Previously Presented) The method of operating a deposition system as claimed in claim 2, wherein the deposition system further comprises an antenna, a dielectric window coupled to the antenna and a wall of the processing chamber, a louvered deposition baffle coupled to the dielectric window, and a ICP source coupled to the antenna, the method further comprising:

operating the ICP source at a first frequency; and

adjusting the ICP source to provide an LND ICP power level for at least a portion of the LND processing time, wherein the LND ICP power level is greater than approximately 3000 w and less than 6000 w.

Claim 8 (Canceled)

9. (Previously Presented) The method of operating a deposition system as claimed in claim 7, wherein the deposition system further comprises a target coupled to a wall of the

processing chamber, a permanent magnet pack coupled to the target, and a DC source coupled to the target, the method further comprising:

setting a power output level for the DC source at a first LND target power level during at least a portion of the LND processing time, wherein the first LND target power level is greater than approximately 1000 w and less than approximately 3000 w.

10. (Original) The method of operating a deposition system as claimed in claim 2, wherein the deposition system further comprises a gas supply system coupled to the processing chamber, the method further comprising:

flowing a first process gas into the processing chamber during at least a portion of the LND processing time, wherein the first process gas comprises an inert gas, a nitrogen-containing gas, an oxygen-containing gas, or a metal-containing gas, or a combination thereof.

11. (Previously Presented) The method of operating a deposition system as claimed in claim 10, wherein the inert gas comprises argon (Ar), helium (He), krypton (Kr), radon (Rn), or xenon (Xe), or a combination thereof.

12. (Previously Presented) The method of operating a deposition system as claimed in claim 10, wherein the metal-containing gas comprises tungsten (W), copper (Cu), tantalum (Ta), titanium (Ti), ruthenium (Ru), iridium (Ir), aluminum (Al), silver (Ag), or lead (Pb), or a combination thereof.

13. (Original) The method of operating a deposition system as claimed in claim 1, wherein the LND process is used to deposit a barrier layer.

14. (Previously Presented) The method of operating a deposition system as claimed in claim 1, further comprising:

changing the process from an LND process step to a No Net Deposition (NND) process step, thereby changing the deposition rate from an LND deposition rate to an NND deposition rate; and

processing the patterned substrate using the NND process step by depositing material on the sidewall while depositing or etching material, or a combination thereof, on the field area or the bottom surface, or a combination thereof, wherein a chamber pressure, chamber temperature, substrate temperature, a process gas chemistry, a process gas flow rate, a target material, an ICP power, substrate position, a target power, or a substrate bias power, or a combination thereof, is adjusted to change the process from the LND process to the NND process.

15. (Previously Presented) The method of operating a deposition system as claimed in claim 14, wherein the rate of deposition for the NND process on the field area or the bottom surface, or the combination thereof, ranges from approximately –10 nm/min to approximately +10 nm/min.

16. (Previously Presented) The method of operating a deposition system as claimed in claim 15, wherein the rate of deposition for the NNC process on the field area or the bottom surface, or the combination thereof, ranges from approximately –5 nm/min to approximately +5 nm/min.

17. (Previously Presented) The method of operating a deposition system as claimed in claim 14, wherein the rate of deposition for the NND process on the sidewall ranges from approximately 0 nm/min to approximately +10 nm/min.

18. (Previously Presented) The method of operating a deposition system as claimed in claim 19, wherein the rate of deposition for the NND process on the sidewall ranges from approximately 0 nm/min to approximately +5 nm/min.

19. (Original) The method of operating a deposition system as claimed in claim 14, wherein the NND process comprises an NND pre-process time, an NND processing time, or an NND post-process time, or a combination thereof; wherein the NND pre-process time varies from approximately 0 seconds to approximately 50 seconds; wherein the NND processing time varies from approximately 10 seconds to approximately 500 seconds; and wherein the NND post-process time varies from approximately 0 seconds to approximately 5000 seconds.

Claims 20-25 (Canceled)

26. (Previously Presented) The method of operating a deposition system as claimed in claim 19, further comprising: establishing an NND chamber pressure during at least a portion of an NND processing time, wherein the NND chamber pressure is less than approximately 130 mTorr and greater than approximately 20 mTorr.

27. (Original) The method of operating a deposition system as claimed in claim 19, further comprising: flowing a second process gas into the processing chamber during at least a portion of the NND processing time, wherein the second process gas comprises an inert gas, a nitrogen-containing gas, an oxygen-containing gas, or a metal-containing gas, or a combination thereof.

Claims 28-29. (Canceled)

30. (Previously Presented) The method of operating a deposition system as claimed in claim 14, wherein the NND process step is used to deposit a seed layer.

31. (Previously Presented) The method of operating a deposition system as claimed in claim 14, wherein the NND process step is used to repair a seed layer.

32. (Previously Presented) The method of operating a deposition system as claimed in claim 14, wherein the NND process step is used to repair a barrier layer.

33. (Previously Presented) The method of operating a deposition system as claimed in claim 14, wherein the NND process step is used to deposit a barrier layer.

34. (Previously Presented) The method of operating a deposition system as claimed in claim 14, wherein the NND process step is used to create a punch through in at least one of the features of the patterned substrate.

35. (Original) The method of operating a deposition system as claimed in claim 1, wherein the deposition system comprises an ionized physical vapor deposition (iPVD) processing chamber.

36. (Original) The method of operating a deposition system as claimed in claim 1, wherein the deposition system comprises a transfer system.

37. (Previously Presented) The method of operating a deposition system as claimed in claim 1, further comprising:

performing a second LND process step, wherein a target power and a substrate bias power are adjusted to establish a second LND deposition rate in a field area of the patterned substrate; and

depositing additional material into features of the patterned substrate while producing substantially no overhanging material at feature openings.

38. (Previously Presented) The method of operating a deposition system as claimed in claim 1, further comprising:

positioning the patterned substrate on a second wafer table within a second processing chamber;

performing a second LND process step, wherein a second target power and a second substrate bias power are adjusted to establish a second LND deposition rate in a field area of the patterned substrate; and

depositing additional material into features of the patterned substrate while producing substantially no overhanging material at feature openings.

39. (Previously Presented) The method of operating a deposition system as claimed in claim 14, further comprising:

performing a second NND process step, wherein a second target power and a second substrate bias power are adjusted to create a second NND deposition rate, the second NND deposition rate being approximately zero in the field area of the patterned substrate; and

processing the patterned substrate, thereby depositing additional material on sidewalls of features of the patterned substrate or bottom surfaces of features of the patterned substrate, or a combination thereof.

40. (Previously Presented) The method of operating a deposition system as claimed in claim 14, further comprising:

positioning the patterned substrate on a second wafer table within a second processing chamber;

performing a second NND process step, wherein a second target power and a second substrate bias power are adjusted to create a second NND deposition rate, the second NND deposition rate being approximately zero in the field area of the patterned substrate; and

processing the patterned substrate, thereby depositing additional material on sidewalls of features of the patterned substrate or bottom surfaces of features of the patterned substrate, or a combination thereof.

Claims 41-42 (Canceled)

43. (Currently Amended) A method of operating an ionized physical vapor deposition system comprising:

positioning a patterned substrate having features including a field area, a sidewall, and a bottom surface on a wafer table within a processing chamber, wherein the wafer table is cooled to a temperature of approximately -30° Celsius;

creating a high density plasma in the processing chamber, wherein the high density plasma comprises a large concentration of metal ions and a large number of process gas ions;

exposing the patterned substrate to the high-density plasma;

performing a No Net Deposition (NND) process step by establishing a chamber pressure of 50-100 mTorr and a NND target power level from approximately 100 w to approximately 1500 w while adjusting the substrate bias power level, wherein a target power or a substrate bias power, or a combination thereof, is adjusted to establish an NND deposition rate, the NND deposition rate comprising a deposition rate on the field area of the substrate that is not more than –10 nanometers per minute (nm/min) and not greater than +10 nanometers per minute (nm/min); and

processing the patterned substrate using the NND process step, thereby depositing material on sidewalls of the features while depositing ~~or~~ and etching material~~, or a combination thereof,~~ onto and from the field area or the bottom surface, or a combination thereof by simultaneously directing ions of the material and ions of inert processing gas onto the substrate and thereby simultaneously depositing material onto the field area of the substrate while etching the deposited material from the field area of the substrate.

Claim 44 (Canceled)

45. (Previously Presented) The method of operating a deposition system as claimed in claim 43, wherein the rate of deposition for the NND process step on the field area or the bottom surface, or the combination thereof, ranges from approximately –5 nm/min to approximately +5 nm/min.

46. (Previously Presented) The method of operating a deposition system as claimed in claim 43, wherein rate of deposition for the NND process on the sidewall ranges from approximately 0 nm/min to approximately +10 nm/min.

47. (Previously Presented) The method of operating a deposition system as claimed in claim 46, wherein rate of deposition for the NND process on the sidewall ranges from approximately 0 nm/min to approximately +5 nm/min.

48. (Previously Presented) The method of operating a deposition system as claimed in claim 43, wherein the NND process step comprises an NND pre-process time, an NND processing time, or an NND post-process time, or a combination thereof, wherein the NND pre-process time varies from approximately 0 seconds to approximately 50 seconds; the NND processing time varies from approximately 10 seconds to approximately 500 seconds; and the NND post-process time varies from approximately 0 seconds to approximately 5000 seconds.

49. (Original) The method of operating a deposition system as claimed in claim 48, wherein the NND processing time is greater than approximately 150 seconds and less than approximately 250 seconds.

Claims 50-52 (Canceled)

53. (Original) The method of operating a deposition system as claimed in claim 48, wherein the deposition system further comprises a target coupled to a wall of the processing chamber, a permanent magnet pack coupled to the target, and a DC source coupled to the target, the method further comprising: adjusting the NND target power to a value to achieve the NND deposition rate during at least a portion of the NND processing time, wherein the NND target power ranges from approximately 100 w to approximately 1500 w.

54. (Cancelled)

55. (Previously Presented) The method of operating a deposition system as claimed in claim 48, wherein the deposition system further comprises an antenna, a dielectric window coupled to the antenna and a wall of the processing chamber, a louvered deposition baffle coupled to the dielectric window, and an ICP RF source coupled to the antenna, the method further comprising:

operating the ICP RF source at a first frequency; and

adjusting the ICP source to provide an NND ICP power level for at least a portion of the NND processing time, wherein the NND ICP power level is greater than approximately 1000 w and less than approximately 10,000 w.

Claim 56 (Canceled)

57. (Previously Presented) The method of operating a deposition system as claimed in claim 55, wherein the NND ICP power level ranges from approximately 3000 w to approximately 6000 w.

58. (Previously Presented) The method of operating a deposition system as claimed in claim 48, wherein the deposition system further comprises a gas supply system coupled to the processing chamber, the method further comprising: flowing a first process gas into the processing chamber during at least a portion of the NND processing time, wherein the first process gas comprises an inert gas, a nitrogen-containing gas, an oxygen-containing gas, or a metal-containing gas, or a combination thereof.

59. (Previously Presented) The method of operating a deposition system as claimed in claim 58, wherein the inert gas comprises argon (Ar), helium (He), krypton (Kr), radon (Rn), or xenon (Xe), or a combination thereof.

60. (Previously Presented) The method of operating a deposition system as claimed in claim 58, wherein the metal-containing gas comprises tungsten (W), copper (Cu), tantalum (Ta), titanium (Ti), ruthenium (Ru), iridium (Ir), aluminum (Al), silver (Ag), or lead (Pb), or a combination thereof.

61. (Previously Presented) The method of operating a deposition system as claimed in claim 43, wherein the NND process step is used to deposit a barrier layer.

62. (Previously Presented) The method of operating a deposition system as claimed in claim 43, wherein the NND process step is used to repair a barrier layer.

63. (Previously Presented) The method of operating a deposition system as claimed in claim 43, wherein the NND process step is used to create a punch through in at least one of the features of the patterned substrate.

64. (Previously Presented) The method of operating a deposition system as claimed in claim 43, further comprising:

changing the process from an NND process step to a Low Net Deposition (LND) process step, thereby changing the deposition rate from an NND deposition rate to an LND deposition rate; and

processing the patterned substrate using the LND process, by depositing material onto the field area at a deposition rate of not more than 30 nanometers per minute (nm/min) while depositing or etching material, or a combination there, on the sidewall or the bottom surface, or a combination thereof and producing substantially no overhanging material at feature openings, wherein a chamber pressure, chamber temperature, substrate temperature, a process gas chemistry, a process gas flow rate, a target material, an ICP power, substrate position, a target power, or a substrate bias power, or a combination thereof, is adjusted to change the process from the NND process step to the LND process step.

Claims 65-66 (Canceled)

67. (Previously Presented) The method of operating a deposition system as claimed in claim 64, wherein the rate of deposition for the LND process step on the bottom surface ranges from approximately –10 nm/min to approximately +10 nm/min.

68. (Previously Presented) The method of operating a deposition system as claimed in claim 67, wherein the rate of deposition for the LND process step on the bottom surface ranges from approximately –5 nm/min to approximately +5 nm/min.

69. (Previously Presented) The method of operating a deposition system as claimed in claim 64, wherein the LND process step comprises an LND pre-process time, an LND processing time, or an LND post-process time, or a combination thereof, wherein the LND pre-process time varies from approximately 0 seconds to approximately 50 seconds; the LND processing time varies from approximately 10 seconds to approximately 500 seconds; and the LND post-process time varies from approximately 0 seconds to approximately 5000 seconds.

70. (Original) The method of operating a deposition system as claimed in claim 69, wherein the LND processing time is greater than approximately 150 seconds and less than approximately 250 seconds.

Claims 71-72 (Canceled)

73. (Original) The method of operating a deposition system as claimed in claim 69, further comprising: adjusting the LND target power to a new value during at least a portion of the LND processing time, wherein the LND target power ranges from approximately 10 w to approximately 2000 w.

74. (Original) The method of operating a deposition system as claimed in claim 73, wherein the LND target power ranges from approximately 800 w to approximately 1600 w.

Claims 75-76 (Canceled)

77. (Previously Presented) The method of operating a deposition system as claimed in claim 69, further comprising: establishing an LND chamber pressure during at least a portion of an LND processing time, wherein the LND chamber pressure is less than approximately 100 mTorr and greater than approximately 20 mTorr.

78. (Original) The method of operating a deposition system as claimed in claim 69, further comprising: flowing an LND process gas into the processing chamber during at least a portion of the LND processing time, wherein the LND process gas comprises an inert gas, a nitrogen-containing gas, an oxygen-containing gas, or a metal-containing gas, or a combination thereof.

79. (Previously Presented) The method of operating a deposition system as claimed in claim 78, wherein the inert gas comprises argon (Ar), helium (He), krypton (Kr), radon (Rn), or xenon (Xe), or a combination thereof.

80. (Previously Presented) The method of operating a deposition system as claimed in claim 78, wherein the metal-containing gas comprises tungsten (W), copper (Cu), tantalum (Ta), titanium (Ti), ruthenium (Ru), iridium (Ir), aluminum (Al), silver (Ag), or lead (Pb), or a combination thereof.

81. (Previously Presented) The method of operating a deposition system as claimed in claim 64, wherein the LND process step is used to deposit a seed layer.

82. (Previously Presented) The method of operating a deposition system as claimed in claim 64, wherein the LND process step is used to repair a seed layer.

83. (Previously Presented) The method of operating a deposition system as claimed in claim 64, wherein the LND process step is used to repair a barrier layer.

84. (Original) The method of operating a deposition system as claimed in claim 43, wherein the deposition system comprises an ionized physical vapor deposition (iPVD) processing chamber.

85. (Original) The method of operating a deposition system as claimed in claim 43, wherein the deposition system comprises a transfer system.

86. (Previously Presented) The method of operating a deposition system as claimed in claim 64, further comprising: performing a second LND process step, wherein a target power and a substrate bias power are adjusted to establish a second LND deposition rate in a field area of the patterned substrate; and depositing additional material into features of the patterned substrate while producing substantially no overhanging material at feature openings.

87. (Previously Presented) The method of operating a deposition system as claimed in claim 64, further comprising:

positioning the patterned substrate on a second wafer table within a second processing chamber;

performing a second LND process step, wherein a second target power and a second substrate bias power are adjusted to establish a second LND deposition rate in a field area of the patterned substrate; and

depositing additional material into features of the patterned substrate while producing substantially no overhanging material at feature openings.

88. (Previously Presented) The method of operating a deposition system as claimed in claim 43, further comprising:

performing a second NND process step, wherein a second target power and a second substrate bias power are adjusted to create a second NND deposition rate, the NND deposition rate being approximately zero in the field area of the patterned substrate; and

processing the patterned substrate, thereby depositing additional material on sidewalls of features of the patterned substrate or bottom surfaces of features of the patterned substrate, or a combination thereof.

89. (Previously Presented) The method of operating a deposition system as claimed in claim 43, further comprising:

positioning the patterned substrate on a second wafer table within a second processing chamber; performing a second NND process step, wherein a second target power and a second substrate bias power are adjusted to create a second NND deposition rate, the second NND deposition rate being approximately zero in the field area of the patterned substrate; and

processing the patterned substrate, thereby depositing additional material on sidewalls of features of the patterned substrate or bottom surfaces of features of the patterned substrate, or a combination thereof.

Claims 90-91 (Canceled)

92. (Previously Presented) A method of processing semiconductor substrates by depositing material into features of the patterned substrate having a field area, a sidewall, a bottom surface, and an opening while producing substantially no overhanging material at the opening, the method comprising:

positioning a patterned substrate on a wafer table within a processing chamber of an ionized physical vapor deposition (iPVD) system, wherein the wafer table is cooled to a temperature of approximately -30° Celsius;

creating, in the processing chamber, a high density plasma of process gas ions that includes vaporized metal coating material having a high fraction of positive ions;

exposing the patterned substrate to the high-density plasma that includes coating material and gas ions and performing therewith on the substrate an ionized physical vapor deposition process while controlling parameters of the iPVD system to simultaneously coat and etch the substrate so as to thereby establish a net deposition rate of not more than approximately 30 nanometers per minute onto the field area of the substrate while material is deposited and etched on the sidewall or bottom surface, or a combination thereof.

93. (Original) The method of claim 92 wherein:

the performing of the ionized physical vapor deposition process includes the depositing of a barrier layer on the sidewalls of vias or trenches on the substrate.

94. (Original) The method of claim 92 wherein:

the performing of the ionized physical vapor deposition process includes the depositing of a seed layer on the sidewalls of vias or trenches on the substrate.

95. (Original) The method of claim 92 wherein:

the performing of the ionized physical vapor deposition process includes controlling parameters of the iPVD system to establish a net zero deposition rate on a field area of the substrate.

96. (Previously Presented) The method of claim 1 wherein the depositing of material onto the field area occurs simultaneously with the etching of material from the sidewall or the bottom surface, or a combination thereof.

97. (Previously Presented) The method of claim 43 wherein the depositing of material onto the sidewalls occurs simultaneously with the etching of material from the field area or the bottom surface, or a combination thereof.

98. (Currently Amended) A method of operating an ionized physical vapor deposition system comprising:

positioning a patterned substrate having features including a field area, a sidewall, and a bottom surface on a wafer table within a processing chamber, wherein the processing chamber is at a chamber pressure of greater than approximately 20 mTorr and less than approximately 130 mTorr;

creating a high density plasma in the processing chamber, wherein the high density plasma comprises ions of coating material and a large number of process gas ions;

exposing the patterned substrate to the high-density plasma; and

performing a Low Net Deposition (LND) process step of simultaneously directing ions of the coating material and ions of inert processing gas onto the substrate and thereby depositing material onto the field area of the substrate while etching the deposited material from the field area to minimize overhanging material at feature openings by adjusting an ICP source to provide an LND ICP power level of greater than approximately 3000 w and less than 6000 w and adjusting a power output level for a DC source coupled to a target to an LND target power level greater than approximately 1000 w and less than approximately 3000 w to establish an LND deposition rate for depositing material onto the field area, where the LND deposition rate is less than 30 nanometers per minute (nm/min) while material is deposited and etched on the sidewall or the bottom surface, or a combination thereof, thereby producing substantially no overhanging material at a feature opening.

99. (Previously Presented) The method of operating a deposition system according to claim 98, wherein the performing the LND process step further includes adjusting an LND substrate bias power to greater than approximately 0 w and less than approximately 200 w.

100. (Previously Presented) The method of operating a deposition system according to claim 98, wherein the performing the LND process step further includes adjusting a wafer table temperature to approximately -30° Celsius.

101. (Previously Presented) The method of operating a deposition system according to claim 98, wherein the deposition system further comprises a gas supply system coupled to the processing chamber, the method further comprising:

flowing a first process gas into the processing chamber during at least a portion of the LND process step, wherein the first process gas comprises an inert gas, a nitrogen-containing gas, an oxygen-containing gas, or a metal-containing gas, or a combination thereof.

102. (Previously Presented) The method of operating a deposition system according to claim 98, further comprising:

performing a No Net Deposition (NND) process step after performing the LND process step by adjusting the ICP source to provide an NND ICP power level of greater than approximately 1000 w and less than 10,000 w and adjusting the power output level for the DC source coupled to the target to an NND target power level greater than approximately 100 w and less than approximately 1500 w to establish an NND deposition rate for depositing material onto the field area, where the NND deposition rate is greater than approximately -10 nanometers per minute (nm/min) and less than 10 nanometers per minute (nm/min) while material is deposited onto the sidewall and while material is deposited and etched on the bottom surface, thereby producing substantially no overhanging material at the feature opening.

103. (Currently Amended) A method of operating a<u>n ionized physical vapor</u> deposition system comprising:

positioning a patterned substrate having features including a field area, a sidewall, and a bottom surface on a wafer table within a processing chamber, wherein the processing chamber is at a chamber pressure of greater than approximately 20 mTorr and less than approximately 130 mTorr;

creating a high density plasma in the processing chamber, wherein the high density plasma comprises ions of coating material and a large number of process gas ions;

exposing the patterned substrate to the high-density plasma; and

performing a No Net Deposition (NND) process step <u>of simultaneously directing ions of the coating material and ions of inert processing gas onto the substrate and thereby depositing material onto the field area of the substrate while etching the deposited material from the field area to minimize overhanging material at feature openings</u> by adjusting an ICP source to provide an NND ICP power level of greater than approximately 1000 w and less than 10,000 w and adjusting a power output level for a DC source coupled to a target to an NND target power level greater than approximately 100 w and less than approximately 1500 w to establish an NND deposition rate for depositing material onto the field area, where the NND deposition rate is greater than approximately -10 nanometers per minute (nm/min) and less than 10 nanometers per minute (nm/min) while material is deposited onto the sidewall and while material is deposited and etched on the bottom surface, thereby producing substantially no overhanging material at a feature opening.

104. (Previously Presented) The method of operating a deposition system according to claim 103, wherein the performing the NND process step further includes adjusting an NND substrate bias power to greater than approximately 500 w and less than approximately 1500 w.

105. (Previously Presented) The method of operating a deposition system according to claim 103, wherein the performing the NND process step further includes adjusting a wafer table temperature to approximately -30° Celsius.

106. (Previously Presented) The method of operating a deposition system according to claim 103, wherein the deposition system further comprises a gas supply system coupled to the processing chamber, the method further comprising:

flowing a first process gas into the processing chamber during at least a portion of the NND process step, wherein the first process gas comprises an inert gas, a nitrogen-containing gas, an oxygen-containing gas, or a metal-containing gas, or a combination thereof.

107. (Previously Presented) The method of operating a deposition system according to claim 103, further comprising:

performing a Low Net Deposition (LND) process step after performing the NND process step by adjusting the ICP source to provide an LND ICP power level of greater than approximately 3000 w and less than 6000 w and adjusting the power output level for the DC source coupled to the target to an LND target power level greater than approximately 1000 w and less than approximately 3000 w to establish an LND deposition rate for depositing material onto the field area, where the LND deposition rate is less than 30 nanometers per minute (nm/min) while material is deposited and etched on the sidewall or the bottom surface, or a combination thereof, thereby producing substantially no overhanging material at the feature opening.

108. (New) The method of operating a deposition system according to claim 99, wherein:

the performing the LND process step further includes adjusting a wafer table temperature to approximately -30° Celsius; and

the deposition system further comprises a gas supply system coupled to the processing chamber and the method further comprises flowing a first process gas into the processing chamber during at least a portion of the LND process step, wherein the first process gas comprises an inert gas, a nitrogen-containing gas, an oxygen-containing gas, or a metal-containing gas, or a combination thereof.

109. (New) The method of operating a deposition system according to claim 108, further comprising:

performing a No Net Deposition (NND) process step after performing the LND process step by adjusting the ICP source to provide an NND ICP power level of greater than approximately 1000 w and less than 10,000 w and adjusting the power output level for the DC source coupled to the target to an NND target power level greater than approximately 100 w and less than approximately 1500 w to establish an NND deposition rate for depositing material onto the field area, where the NND deposition rate is greater than approximately -10 nanometers per minute (nm/min) and less than 10 nanometers per minute (nm/min) while material is deposited onto the sidewall and while material is deposited and etched on the bottom surface, thereby producing substantially no overhanging material at the feature opening.

110. (New) The method of operating a deposition system according to claim 104, wherein:

the performing the NND process step further includes adjusting a wafer table temperature to approximately -30° Celsius; and

the deposition system further comprises a gas supply system coupled to the processing chamber and the method further comprises flowing a first process gas into the processing chamber during at least a portion of the NND process step, wherein the first process gas comprises an inert gas, a nitrogen-containing gas, an oxygen-containing gas, or a metal-containing gas, or a combination thereof.

111. (New) The method of operating a deposition system according to claim 110, further comprising:

performing a Low Net Deposition (LND) process step after performing the NND process step by adjusting the ICP source to provide an LND ICP power level of greater than approximately 3000 w and less than 6000 w and adjusting the power output level for the DC source coupled to the target to an LND target power level greater than approximately 1000 w and less than approximately 3000 w to establish an LND deposition rate for depositing material onto the field area, where the LND deposition rate is less than 30 nanometers per minute (nm/min) while material is deposited and etched on the sidewall or the bottom surface, or a combination thereof, thereby producing substantially no overhanging material at the feature opening.